

Day 1

Chalice Goat

Goal \$75

\$0

\$5 Raised

Dec 15-7:58 AM

Multiple-Choice

1. What is the value of $5x^3y^2$ when $x = 2$ and $y = 4$?

a 240

b 320

c 480

d 640

2. What exponent goes in the box to make the following equation true?

$\frac{x^{\square}y^6}{x^2} = x^{12}$

a 9

b 8

c 4

d 3

3. Mario is making fruit punch by mixing orange juice and pineapple juice in a ratio of 1:3. How much pineapple juice should he use to make 3 L of fruit punch?

a 0.75 L

b 2 L

c 2.25 L

d 4 L

4. Which of the following is a simplified form of the expression $4(5x - 8) - 3(2x - 7)$?

a $14x - 11$

b $14x - 53$

c $26x - 11$

d $26x - 53$

Multiple-Choice

1. What is the value of $5x^3y^2$ when $x = 2$ and $y = 4$?

a 240

b 320

c 480

☒ d 640

$5(2)^3(4)^2$
 $5(8)(16)$

2. What exponent goes in the box to make the following equation true?

$\frac{x^{\square}y^6}{x^2} = x^{12}$

☒ a 9

b 8

c 4

d 3

$\frac{x^{14}}{x^2}$

3. Mario is making fruit punch by mixing orange juice and pineapple juice in a ratio of 1:3. How much pineapple juice should he use to make 3 L of fruit punch?

a 0.75 L

b 2 L

☒ c 2.25 L

d 4 L

$\frac{3}{1} = \frac{x}{3}$
 $3(3) = \frac{9}{4} = 2.25$

4. Which of the following is a simplified form of the expression $4(5x - 8) - 3(2x - 7)$?

☒ a $14x - 11$

b $14x - 53$

c $26x - 11$

d $26x - 53$

$20x - 32 - 6x + 21$
 $14x - 11$

Scale factor

5. The square and the triangle below have the same area.

$A = s^2$

12 cm

18 cm

$A = \frac{bh}{2}$

6n cm

What is the value of n ?

a 1

b 2

c 8

d 16

5. The square and the triangle below have the same area.

$A = s^2$

12 cm

18 cm

$A = \frac{bh}{2}$

6n cm

What is the value of n ?

☒ a 1

b 2

c 8

d 16

$144 = \frac{8n(18)}{2}$
 $144 = 8n(13)$
 $\frac{144}{18} = \frac{8n}{13}$
 $\frac{16}{9} = \frac{8n}{13}$
 $2 = n$

Open-Response

6. Healthy Fish

James adds vitamin drops to his fish tank to keep his fish healthy. If James follows the instructions on the bottle of vitamins, how many capsules should he add to his 350-liter fish tank?

Show your work.

2 drops per 5 litres of water

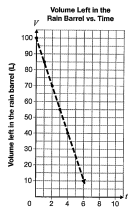
1 capsule = 40 drops

$\frac{2d}{5L} = \frac{1d}{2.5L}$
 $\frac{1}{2.5} \times 140 = \frac{140d}{350L}$
 $\frac{140}{40} = 3.5 \text{ capsules}$

1

Multiple-Choice

7. A rain barrel full of water is drained at a constant rate. Data for the first few minutes of draining is shown on the grid below.



After 6 minutes, the draining is stopped.
How much water is needed to refill the rain barrel?

☒ a 10 L
☐ b 75 L
☐ c 25 L
☐ d 10 L

8. Luisa chooses a cellphone plan that charges a flat fee of \$20 per month and \$0.25 for each text message sent.
Which equation best represents the cost of Luisa's cellphone plan, C , in dollars, where n is the number of text messages sent?

☐ a $C = 20.25n$
☐ b $C = 200(25n)$
☐ c $C = 20n + 0.25$
☒ d $C = 0.25n + 20$

$y = mx + b$
 $y = 0.25x + 20$

9. There is a linear relationship between the total cost of renting a costume and the number of hours the costume is rented.

- For 3 hours, the total cost is \$60.
- For 5 hours, the total cost is \$80.

What type of variation is this relationship, and what is its initial value?

a a partial variation with an initial value of \$30
b a partial variation with an initial value of \$20
c a direct variation with an initial value of \$30
d a direct variation with an initial value of \$20

9. There is a linear relationship between the total cost of renting a costume and the number of hours the costume is rented.

- For 3 hours, the total cost is \$60.
- For 5 hours, the total cost is \$80.

What type of variation is this relationship, and what is its initial value?

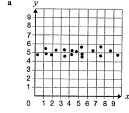
☒ a partial variation with an initial value of \$30
☐ b a partial variation with an initial value of \$20
☒ c a direct variation with an initial value of \$30
☒ d a direct variation with an initial value of \$20

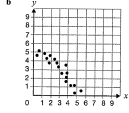
$(3, 60)$ $(5, 80)$

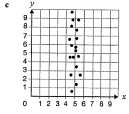
$\frac{80 - 60}{5 - 3} = \frac{20}{2} = 10$

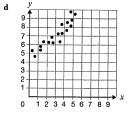
$y = mx + b$
 $y = 10x + b$
 $60 = 10(3) + b$
 $60 = 30 + b$
 $60 - 30 = b$
 $30 = b$

10. For which scatter plot could the line $y = 5$ be the line of best fit?

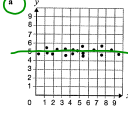
a 

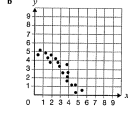
b 

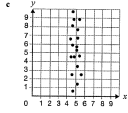
c 

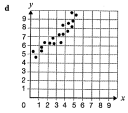
d 

10. For which scatter plot could the line $y = 5$ be the line of best fit?

☒ a 

b 

c 

d 

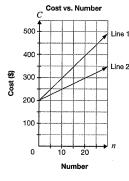
$y = 5$
horizontal

11. Alex's distance from home is represented by the equation $D = -0.5t + 300$, where D represents his distance from home, in kilometers, and t represents time, in minutes.

How long will it take Alex to reach a distance of 182 km from home?

a 236 minutes
b 209 minutes
c 64 minutes
d 59 minutes

12. Two lines are shown below.



Which of the following describes a difference between Line 1 and Line 2?

a Line 2 has a larger initial cost.
b Line 1 has a larger initial cost.
c Line 2 has a greater rate of change.
d Line 1 has a greater rate of change.

11. Alex's distance from home is represented by the equation $D = -0.5t + 300$, where D represents his distance from home, in kilometres, and t represents time, in minutes.

How long will it take Alex to reach a distance of 182 km from home?

- a 209 minutes
b 209 minutes
c 64 minutes
d 59 minutes

$$182 = -0.5t + 300$$

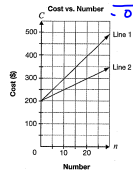
$$182 - 300 = -0.5t$$

$$-118 = -0.5t$$

$$\frac{-118}{-0.5} = \frac{-0.5t}{-0.5}$$

$$236 = t$$

12. Two lines are shown below.



Which of the following describes a difference between Line 1 and Line 2?

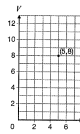
- a Line 2 has a larger initial cost.
b Line 1 has a larger initial cost.
c Line 2 has a greater rate of change.
d Line 1 has a greater rate of change.

Multiple-Choice

15. Which of the following equations is equivalent to $3x - 5y = 45$?

- a $y = \frac{3}{5}x - 9$
b $y = -\frac{3}{5}x + 9$
c $y = 3x - 45$
d $y = -3x + 45$

16. The point on the grid below belongs to a linear relation that has $-\frac{3}{2}$ as its rate of change.



Which of the following points also belongs to this relation?

- a (2, 6)
b (2, 10)
c (3, 11)
d (7, 11)

Multiple-Choice

15. Which of the following equations is equivalent to $3x - 5y = 45$?

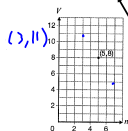
- a $y = \frac{3}{5}x - 9$
b $y = -\frac{3}{5}x + 9$
c $y = 3x - 45$
d $y = -3x + 45$

$$-5y = -3x + 45$$

$$\frac{-5y}{-5} = \frac{-3x + 45}{-5}$$

$$y = \frac{3}{5}x - 9$$

16. The point on the grid below belongs to a linear relation that has $-\frac{3}{2}$ as its rate of change.

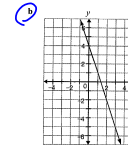
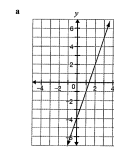


$$M = -\frac{3}{2} = \frac{\text{rise}}{\text{run}}$$

Which of the following points also belongs to this relation?

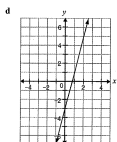
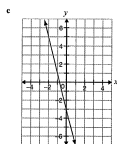
- a (2, 6)
b (2, 10)
c (3, 11)
d (7, 11)

17. Which of the following lines has the same slope as the line represented by $y = -3x + 4$?



$$y = mx + b$$

$$m = -3$$



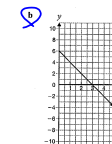
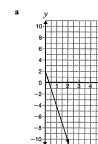
18. Which equation below represents a line that is perpendicular to the line represented by $y = 3x - 5$?

- a $y = 3x + \frac{1}{3}$
b $y = -3x - \frac{1}{3}$
c $y = -\frac{1}{3}x + 7$
d $y = \frac{1}{3}x - 7$

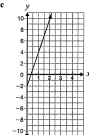
$$\text{-ve reciprocal}$$

$$\frac{3}{1} \Rightarrow -\frac{1}{3}$$

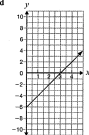
19. Which of the following is the graph of the equation $y = -2x + 6$?



c



d



20. The equations below represent the relationship between the total cost, C , in dollars, to repair a computer and the amount of time, t , in hours, at two computer repair stores.

Compu-Fix: $C = 10 + 15t$

Data Repair: $C = 30 + 12t$

It will take between 1 and 5 hours to repair Maria's computer.

What are the smallest and largest possible amounts Maria could pay?

a \$10, \$85

b \$10, \$90

c \$25, \$85

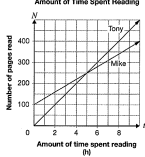
d ☒ \$25, \$90

25 55

42 90

21. Tony and Mike decide to keep track of their reading. The graph below represents the relationship between the number of pages of a novel each has read and the time spent reading since they started tracking.

Number of Pages Read vs. Amount of Time Spent Reading



Which of the following statements is true?

a At 5 hours, Mike has read 100 pages more than Tony.

b ☒ Before 5 hours, Tony has read fewer pages than Mike.

c At 50 minutes, Mike has read the same number of pages as Tony.

d It takes 50 minutes for Tony to catch up to the number of pages that Mike has read.